EXPERIMENTAL EYE RESEARCH

Editors-in-Chief
ENDRE A. BALAZS and K. E. EAKINS

Editors
A. Bill
L. Z. Bito
H. Bloemendal
A. I. Cohen
H. Davson
G. Duncan
J. Harding
J. Hollyfield
J. H. Kinoshita
M. E. Langham
D. M. Maurice
R. H. Meyers-Elliot
S. Mishima
P. J. O'Brien
J. Piatigorsky
Y. Pouliquen
H. Ripps
J. W. Rohen
A. Spector
R. Tripathi
J. A. Zadunaisky

VOLUME 37
1983

ACADEMIC PRESS

London New York San Diego San Francisco
São Paulo Sydney Tokyo Toronto
A Subsidiary of Harcourt Brace Jovanovich, Publishers

Copyright © 1983 by Academic Press Inc. (London) Ltd.
ALL RIGHTS RESERVED

No part of this volume may be produced in any form, by photostat, microfilm, or any other means, without written permission from the publishers.

Printed in Great Britain

CONTENTS OF VOLUME 37

Number 1, July 1983

Masters, B. R., Riley, M. V., Fischbarg, J. and Chance, B. Pyridine Nucleotides of Rabbit Cornea with Histotoxic Anoxia: Chemical Analysis, Non-invasive Fluorometry and Physiological Correlates 1

Cheng, H.-M., Fagerholm, P. and Chylack, L. T., Jr. Response of the Lens to Oxidative-Osmotic Stress 11

Nguyen-Legros, J., Vigny, A. and Gay, M. Post-natal Development of TH-like Immunoreactivity in the Rat Retina 23

Cenedella, R. J. Source of Cholesterol for the Ocular Lens, Studied with U18666A.: A Cataract-producing Inhibitor of Lipid Metabolism 33

Delamere, N. A., Paterson, C. A. and Cotton, T. R. Lens Cation Transport and Permeability Changes Following Exposure to Hydrogen Peroxide 45

Fischer, F. and Gärtner, J. Morphometric Analysis of Basal Laminae in Rats with Long-Term Streptozotocin Diabetes. II. Retinal Capillaries 55

Creighton, M. O., Sanwal, M., Stewart-DeHaan, P. J. and Trevithick, J. R. Modeling Cortical Cataractogenesis. V. Steroid Cataracts Induced by Solumedrol Partially Prevented by Vitamin E in vitro 65

Jernigan, H. M., Jr. Metabolism of ^{15}N-Labeled Amino Acids in Rat Lens 77

Kern, H. L. and Ingalls, L. K. Selective Early Effect of Hypotonicity on Transport in the Lens 85

Dillon, J., Mehlman, B., Ponticorvo, L. and Spector, A. The State of Neutral Lipids in Human Lenses 91

Letter to the Editors

Gual, A., Blanco, J., Belmonte, C. and Garcia, A. G. Dopamine β-Hydroxylase Activity in Human Aqueous Humor 99

Announcements 103

Number 2, August 1983

Patterson, J. W. Volume Regulation in Rat Lenses in Media with Varying Concentrations of Potassium and Sodium 105

Jedziniak, J. and Rokita, J. Aldehyde Metabolism in the Human Lens 119

Wagner, N., Kanai, A., Harrington, J. S., Kaufman, H. E. and Nakamoto, T. Cataract Formation in Newborn Rats from Feeding a Liquid Protein Diet During Gestation 129

Ondruska, O., and Hanson, D. M. Raman Spectra of Duck, Rat, and Flounder Lenses and the Formation of Dry and Cold Cataracts 139

Hanson, D. M., Ondruska, O., Strubinger, L. M. and Lal, B. B. Laser Selected Fluorescence of Human Cataractous Lenses at Liquid Helium Temperatures 145

Coulter, J. B., III., Engelke, J. A. and Eaton, D. K. Insulin Concentration in Aqueous Humor of Rabbits: Effects of Alloxan-Diabetes and Insulin Treatment 153

Wiegand, R. D. and Anderson, R. E. Phospholipid Molecular Species of Frog Rod Outer Segment Membranes 159

Lucas, V. A. and Duncan, G. Specificity of Glucose Transport Inhibitors in the Frog Lens 175

van Raaij, A. J. M., de Leeuw, A. L. M., Janssen, A. P. M. and Broekhuyse, R. M. Immunological Relationship between the EDTA-extractable Proteins from Calf Lens Fiber Membranes 183

Cole, D. F., Bloom, S. R., Burnstock, G., Butler, J. M., McGregor, G. P., Saffrey, M. J., Unger, W. G. and Zhang, S. Q. Increase in SP-like Immunoreactivity in Nerve Fibres of Rabbit Iris and Ciliary Body One to Four Months Following Sympathetic Denervation 191

Ball, A. K. and Dickson, D. H. Identification of Sulphur Groups in the Outer Plexiform Layer of the Newt Retina 199

Letters to the Editors

Sen, P. C. and Pfeiffer, D. R. Tissue-specific Inhibition of ATPase Activities in Rat Induced by Triparanol Feeding 209

Allen, J. M., McGregor, G. P., Adrian, T. E., Bloom, R. S., Zhang, S. Q., Ennis, K. W. and Unger, W. G. Reduction of Neuropeptide Y(NPY) in the Rabbit Iris-Ciliary Body after Chronic Sympathectomy 213

Number 3, September 1983

Dimattio, J. and Zadunaisky, J. A. Reduced Ocular Glucose Transport and Increased Non-electrolyte Permeability in Rats with Retinal Degeneration (RCS) 217

Labermeier, U., Demlow, T. A. and Kenney, M. C. Identification of Collagens Isolated from Bovine Descemet's Membrane 225

Lombardi, J. B. and Prien, S. D. Taurine Binding by Rat Retinal Membranes 239

Stefánsson, E., Wolbarsht, M. L. and Landers, M. B. III. In vivo O_2 Consumption in Rhesus Monkeys in Light and Dark 251

Hylkema, H. A., Ratham, W. M. and Kijlstra, A. Deposition of Immune Complexes in the Mouse Eye 257

Bhat, K. S. Distribution of HMW Proteins and Crystallins in Cataractous Lenses from Undernourished and Well-nourished Subjects 267

Said, R., Bonne, C., Regnault, F. and Sincholle, D. In vitro Study of γ-Glutamyl Transpeptidase in Rat Lens 273

Yousufzai, S. Y. K. and Abdel-Latif, A. A. Effects of Norepinephrine and other Pharmacological Agents on Prostaglandin E_2 Release by Rabbit and Bovine Irides 279

Wilson, W. S. and Barany, E. Iris Delay, a Neglected Factor in Aqueous Humour Dynamics. A Study in the Cynomolgus Monkey (*Macaca fascicularis*) 293

Letters to the Editors

Uehara, F., Muramatsu, T., Sameshima, M., Ogata, S. and Ohba, N. Identification of Peanut Agglutinin Receptors in the Monkey Retina 303

Boulton, M. E., Marshall, J. and Mellerio, J. Retinitis Pigmentosa: A Preliminary Report on Tissue Culture Studies of Retinal Pigment Epithelial Cells from Eight Affected Human Eyes 307

Number 4, October 1983

Pritchard, D. J. The Effects of Light on Transdifferentiation and Survival of Chicken Neural Retina Cells 315

Reinach, P. S. and Kirchberger, M. A. Evidence for Catecholamine-Stimulated Adenylate Cyclase Activity in Frog and Rabbit Corneal Epithelium and Cyclic AMP-Dependent Protein Kinase and its Protein Substrates in Frog Corneal Epithelium 327

Randall, C. J., Wilson, M. A., Pollock, B. J., Clayton, R. M., Ross, A. S., Bard, J. B. L. and McLachlan, I. Partial Retinal Dysplasia and Subsequent Degeneration in a Mutant Strain of Domestic Fowl (*rdd*) 337

Grierson, I., Marshall, J. and Robins, E. Human Trabecular Meshwork in Primary Culture: A Morphological and Autoradiographic Study 349

Thomson, J. A. and Augusteyn, R. C. α_m-Crystallin: the Native Form of the Protein? 367

Gupta, K. and Mathur, R. L. Distribution of Taurine in the Crystalline Lens of Vertebrate Species and in Cataractogenesis 379

Gupta, K. and Mathur, R. L. Studies on Synthesis and Uptake of Taurine in Rat Lens in vitro 385

Ireland, M., Lieska, N. and Maisel, H. Lens Actin: Purification and Localization 393

NUMBER 5, NOVEMBER 1983

DIMATTIO, J., DEGAN, K. J. and ZADUNAISKY, J. A. A Model for Transepithelial Ion Transport Across the Isolated Retinal Pigment Epithelium of the Frog 409
FRIEDLAND, A. B. Relationship Between Arterial Pulsations and Intraocular Pressure 421
WACHTMEISTER, L. The Action of Peptides on the Mudpuppy Electroretinogram (ERG) 429
HORIUCHI, M. and IWATA, S. Effect of Nigericin on Distribution of Sodium, Potassium and Calcium Ion in Rabbit Lens 439
FLACH, A. J., ROIZEN, F., WOOD, I. S. and PETERSON, J. S. Postganglionic Chemical Sympathectomy of the Cat Nictitating Membrane Following Systemic Epinephrine: Degeneration of Nerve Terminal Followed by Regeneration 447
ROCKEY, J. H., LI, W. and ECCLESTON, J. F. Binding of Fluorescein and Carboxyfluorescein by Human Serum Proteins: Significance of Kinetic and Equilibrium Parameters of Association in Ocular Fluorometric Studies 455
HERRMANN, R. K., KADOR, P. F. and KINOSHITA, J. H. Rat Lens Aldose Reductase: Rapid Purification and Comparison with Human Placental Aldose Reductase 467
THORIG, L., VAN HAERINGEN, N. J., TIMMERMANS, P. B. M. W. M. and VAN ZWIETEN, P. A. Peroxidase Secretion from Rat Lacrimal Gland Cells in vitro: I. Alpha-Adrenergic Stimulation in the Absence of Alpha-Adrenoceptors 475
THORIG, L., VAN HAERINGEN, N. J., TIMMERMANS, P. W. M. W. M. and VAN ZWIETEN, P. A. Peroxidase Secretion from Rat Lacrimal Gland Cells in vitro: II. The Role of Calcium in Stimulus-Secretion Coupling 485
KEMALI, M., MILICI, N. and KEMALI, D. Modification of the Pigment Screening of the Frog Retina Following Administration of Neuroactive Drugs 493
WIGGERT, B., MASTERSON, E. and COULOMBRE, A. J. Changes in Retinoid Binding Levels During Development of the Chicken Cornea 499
POULSOM, R., BOOTH-HANDFORD, R. P. and HEATH, H. The Effects of Long-term Treatment of Streptozotocin-diabetic Rats with an Aldose Reductase Inhibitor 507
SLINGSBY, C. and MILLER, L. R. Purification and Crystallization of Mammalian Lens γ-Crystallins 517
LETTER TO THE EDITOR
CHAO, C.-C. W. and VERGNES, J.-P. Correction of Tyrosine Content in the Amino Acid Analysis of Human Ocular Mucus and Its Fractions 531

NUMBER 6, DECEMBER 1983

CHAO, C.-C. W., VERGNES, J.-P. and BROWN, S. I. O-Glycosidic Linkage in Glycoprotein Isolates from Human Ocular Mucus 533
MCCALLY, R. L., BARGERON, C. B., GREEN, W. R. and FARRELL, R. A. Stromal Damage in Rabbit Corneas Exposed to CO_2 Laser Radiation 543
JERNIGAN, H. M., JR. Urea Formation in Rat, Bovine, and Human Lens 551
ROSS, W. M., CREIGHTON, M. O., TREVITHICK, J. R., STEWART-DEHAAN, P. J. and SANWAL, M. Modelling Cortical Cataractogenesis: VI. Induction by Glucose in vitro or in Diabetic Rats: Prevention and Reversal by Glutathione 559
COHEN, D. and NIR, I. Cytochemical Evaluation of Anionic Sites on the Surface of Cultured Pigment Epithelium Cells from Normal and Dystrophic RCS Rats 575
OLIPHANT, L. W., JOHNSON, M. R., MURPHY, C. and HOWLAND, H. The Musculature and Pupillary Response of the Great Horned Owl Iris 583
SRIVASTAVA, OM P. and ORTWERTH, B. J. Isolation and Characterization of a 25K Serine Proteinase from Bovine Lens Cortex 597
BORTHWICK, G. M. and FORRESTER, J. V. Purification of Retinal S-Antigen by Ion-Exchange Chromatography and Chromatofocusing 613
BESSEMS, G. J. H., HOENDERS, H. J. and WOLLENSAK, J. Variation in Proportion and Molecular Weight of Native Crystallins from Single Human Lenses upon Aging and Formation of Nuclear Cataract 627

Eckhert, C. D. Elemental Concentrations in Ocular Tissues of Various Species 639
Kremzner, L. T., Roy, D. and Spector, A. Polyamines in Normal and Cataractous Human Lenses: Evidence for Post-Translational Modification 649
Letters to the Editors
Courtois, Y. and Perry, M. M. Comments on the Morphology of Human Lens Epithelial Cells 661
Ringens, P. J., Mungyer, G., Jap, P., Ramaekers, F. C. S., Hoenders, H. J. and Bloemendahl, H. Reply to the Letter by Y. Courtois and M. M. Perry 663
Announcements 665

AUTHOR INDEX

Abdel-Latif, A. A. (see Yousufzai, S. Y. K.), 279
Adrian, T. E. (see Allen, J. M.), 213
Allen, J. M., McGregor, G. P., Adrian, T. E., Bloom, R. S., Zhang, S. Q., Ennis, K. W. and Unger, W. G., Reduction of neuropeptide Y(NPY) in the rabbit iris–ciliary body after chronic sympathectomy, 213
Anderson, R. E. (see Wiegand, R. D.), 159
Augusteyn, R. C. (see Thomson, J. A.), 367

Ball, A. K. and Dickson, D. H., Identification of sulphur groups in the outer plexiform layer of the newt retina, 199
Barany, E. (see Wilson, W. S.), 293
Bard, J. B. L. (see Randall, C. J.), 337
Bargeron, C. B. (see McCally, R. L.), 543
Belmonte, C. (see Gual, A.), 99
Bessems, G. J. H., Hoenders, H. J. and Wollensak, J., Variation in proportion and molecular weight of native crystallins from single human lenses upon aging and formation of nuclear cataract, 627
Bhat, K. S., Distribution of HMW proteins and crystallins in cataractous lenses from undernourished and well-nourished subjects, 267
Blanco, J. (see Gual, A.), 99
Bloemendahl, H. (see Ringens, P. J.), 663
Bloom, R. S. (see Allen, J. M.), 213
Bloom, S. R. (see Cole, D. F.), 191
Bonne, C. (see Said, R.), 273
Booth-Handford, R. P. (see Poulsom, R.), 507
Borthwick, G. M. and Forrester, J. V., Purification of retinal S-antigen by ion-exchange chromatography and chromatofocusing, 613
Boulton, M. E., Marshall, J. and Mellerio, J., Retinitis pigmentosa: a preliminary report on tissue culture studies of retinal pigment epithelial cells from eight affected human eyes, 307
Broekhuyse, R. M. (see Van Raaij, A. J. M.), 183
Brown, S. I. (see Chao, C.-C. W.), 533
Burnstock, G. (see Cole, D. F.), 191
Butler, J. M. (see Cole, D. F.), 191

Cenedella, R. J., Source of cholesterol for the ocular lens, studied with U18666A: a cataract-producing inhibitor of lipid metabolism, 33
Chance, B. (see Masters, B. R.), 1
Chao, C.-C. W. and Vergnes, J.-P., Correction of tyrosine content in the amino acid analysis of human ocular mucus and its fractions, 531
Chao, C.-C. W., Vergnes, J.-P. and Brown, S. I., O-Glycosidic linkage in glycoprotein isolates from human ocular mucus, 533
Cheng, H.-M., Fagerholm, P. and Chylack, L. T., Jr., Response of the lens to oxidative-osmotic stress, 11
Chylack, L. T., Jr. (see Cheng, H.-M.), 11
Clayton, R. M. (see Randall, C. J.), 337
Cohen, D. and Nir, I., Cytochemical evaluation of anionic sites on the surface of cultured pigment epithelium cells from normal and dystrophic RCS rats, 575
Cole, D. F., Bloom, S. R., Burnstock, G., Butler, J. M., McGregor, G. P., Saffrey, M. J., Unger, W. G. and Zhang, S. Q., Increase in SP-like immunoreactivity in nerve fibres of rabbit iris and ciliary body one to four months following sympathetic denervation, 191
Cotton, T. R. (see Delamere, N. A.), 45
Coulombre, A. J. (see Wiggert, B.), 499
Coulter, J. B., III., Engelke, J. A. and Eaton, D. K., Insulin concentration in aqueous humor of rabbits: effects of alloxan-diabetes and insulin treatment, 153
Courtois, Y. and Perry, M. M., Comments on the morphology of human lens epithelial cells, 661
Creighton, M. O., Sanwal, M., Stewart-Dehaan, P. J. and Trevithick, J. R., Modeling cortical cataractogenesis. V. Steroid cataracts induced by solumedrol partially prevented by vitamin E in vitro, 65
Creighton, M. O. (see Ross, W. M.), 559

Degan, K. J. (see Dimattio, J.), 409
Delamere, N. A., Paterson, C. A. and Cotton, T. R., Lens cation transport and permeability changes following exposure to hydrogen peroxide, 45
De Leeuw, A. L. M. (see Van Raaij, A. J. M.), 183
Demlow, T. A. (see Labermeier, U.), 225
Dickson, D. H. (see Ball, A. K.), 199
Dillon, J., Mehlman, B., Ponticorvo, L. and Spector, A., The state of neutral lipids in human lenses, 91
Dimattio, J. and Zadunaisky, J. A., Reduced ocular glucose transport and increased non-electrolyte permeability in rats with retinal degeneration (RCS), 217
Dimattio, J., Degan, K. J. and Zadunaisky, J. A., A model for transepithelial ion transport across the isolated retinal pigment epithelium of the frog, 409
Duncan, G. (see Lucas, V. A.), 175

Eaton, D. K. (see Coulter, J. B., III), 153
Eccleston, J. F. (see Rockey, J. H.), 455
Eckhert, C. D., Elemental concentrations in ocular tissues of various species, 639
Engelke, J. A. (see Coulter, J. B., III), 153
Ennis, K. W. (see Allen, J. M.), 213

Fagerholm, P. (see Cheng, H.-M.), 11
Farrell, R. A. (see McCally, R. L.), 543
Fischbarg, J. (see Masters, B. R.), 1
Fischer, F. and Gärtner, J., Morphometric analysis of basal laminae in rats with long-term streptozotocin diabetes. II. Retinal capillaries, 55
Flach, A. J., Roizen, F., Wood, I. S. and Peterson, J. S., Post-ganglionic chemical sympathectomy of the cat nictitating membrane following systemic epinephrine degeneration of nerve terminal followed by regeneration, 447
Forrester, J. V. (see Borthwick, G. M.), 613
Friedland, A. B., Relationship between arterial pulsations and intraocular pressure, 421

Garcia, A. G. (see Gual, A.), 99
Gärtner, J. (see Fischer, F.), 55
Gay, M. (see Nguyen-Legros, J.), 23
Green, W. R. (see McCally, R. L.), 543
Grierson, I., Marshall, J. and Robins, E., Human trabecular meshwork in primary culture: a morphological and autoradiographic study, 349
Gual, A., Blanco, J., Belmonte, C. and Garcia, A. G., Dopamine β-hydroxylase activity in human aqueous humor, 99
Gupta, K. and Mathur, R. L., Distribution of taurine in the crystalline lens of vertebrate species and in cataractogenesis, 379
Gupta, K. and Mathur, R. L., Studies on synthesis and uptake of taurine in rat lens in vitro, 385

Hanson, D. M., Ondruska, O., Strubinger, L. M. and Lal, B. B., Laser selected fluorescence of human cataractous lenses at liquid helium temperatures, 145
Hanson, D. M. (see Ondruska, O.), 139
Harrington, J. S. (see Wagner, N.), 129
Heath, H. (see Poulsom, R.), 507
Hermann, R. K., Kador, P. F. and Kinoshita, J. H., Rat lens aldose reductase: rapid purification and comparison with human placental aldose reductase, 467
Hoenders, H. J. (see Bessems, G. J. H.), 627
Hoenders, H. J. (see Ringens, P. J.), 663
Horiuchi, M. and Iwata, S., Effect of nigericin on distribution of sodium, potassium and calcium ion in rabbit lens, 439
Howland, H. (see Oliphant, L. W.), 583
Hylkema, H. A., Ratham, W. M. and Kijlstra, A., Deposition of immune complexes in the mouse eye, 257

Ingalls, L. K. (see Kern, H. L.), 85
Ireland, M., Lieska, N. and Maisel, H., Lens actin: purification and localization, 393
Iwata, S. (see Horiuchi, M.), 439

Janssen, A. P. M. (see Van Raaij, A. J. M.), 183
Jap, P. (see Ringens, P. J.), 663
Jedziniak, J. and Rokita, J., Aldehyde metabolism in the human lens, 119

JERNIGAN, H. M., JR., Metabolism of ^{15}N-labeled amino acids in rat lens, 77
JERNIGAN, H. M., JR., Urea formation in rat, bovine, and human lens, 551
JOHNSON, M. R. (see OLIPHANT, L. W.), 583

KADOR, P. F. (see HERRMANN, R. K.), 467
KANAI, A. (see WAGNER, N.), 129
KAUFMAN, H. E. (see WAGNER, N.), 129

KEMALI, M., MILICI, N. and KEMALI, D., Modification of the pigment screening of the frog retina following administration of neuroactive drugs, 493
KEMALI, D. (see KEMALI, M.), 493
KENNEY, M. C. (see LABERMEIER, U.), 255
KERN, H. L. and INGALLS, L. K., Selective early effect of hypotonicity on transport in the lens, 85
KIJLSTRA, A. (see HYLKEMA, H. A.), 257
KINOSHITA, J. H. (see HERRMANN, R. K.), 467
KIRCHBERGER, M. A. (see REINACH, P. S.), 327
KREMZNER, L. T., ROY, D. and SPECTOR, A., Polyamines in normal and cataractous human lenses: evidence for post-translational modification, 649

LABERMEIER, U., DEMLOW, T. A. and KENNEY, M. C., Identification of collagens isolated from bovine Descemet's membrane, 225
LAL, B. B. (see HANSON, D. M.), 145
LANDERS, M. B., III (see STEFÁNSSON, E.), 251
LI, W. (see ROCKEY, J. H.), 455
LIESKA, N. (see IRELAND, M.), 393
LOMBARDI, J. B. and PRIEN, S. D., Taurine binding by rat retinal membranes, 239
LUCAS, V. A. and DUNCAN, G., Specificity of glucose transport inhibitors in the frog lens, 175

MCCALLY, R. L., BARGERON, C. B., GREEN, W. R. and FARRELL, R. A., Stromal damage in rabbit corneas exposed to CO_2 laser radiation, 543
MCGREGOR, G. P. (see ALLEN, J. M.), 213
MCGREGOR, G. P. (see COLE, D. F.), 191
MCLACHLAN, I. (see RANDALL, C. J.), 337
MAISEL, H. (see IRELAND, M.), 393
MARSHALL, J. (see BOULTON, M. E.), 307
MARSHALL, J. (see GRIERSON, I.), 349
MASTERS, B. R., RILEY, M. V., FISCHBARG, J. and CHANCE, B., Pyridine nucleotides of rabbit cornea with histotoxic anoxia: chemical analysis, non-invasive fluorometry and physiological correlates, 1
MASTERSON, E. (see WIGGERT, B.), 499
MATHUR, R. L. (see GUPTA, K.), 379, 385
MEHLMAN, B. (see DILLON, J.), 91
MELLERIO, J. (see BOULTON, M. E.), 307
MILICI, N. (see KEMALI, M.), 493
MILLER, L. R. (see SLINGSBY, C.), 517
MUNGYER, G. (see RINGENS, P. J.), 663
MURAMATSU, T. (see UEHARA, F.), 303
MURPHY, C. (see OLIPHANT, L. W.), 583

NAKAMOTO, T. (see WAGNER, N.), 129
NGUYEN-LEGROS, J., VIGNY, A. and GAY, M., Post-natal development of TH-like immunoreactivity in the rat retina, 23
NIR, I. (see COHEN, D.), 575

OGATA, S. (see UEHARA, F.), 303
OHBA, N. (see UEHARA, F.), 303
OLIPHANT, L. W., JOHNSON, M. R., MURPHY, C. and HOWLAND, H., The musculature and pupillary response of the great horned owl iris, 583
ONDRUSKA, O. and HANSON, D. M., Raman spectra of duck, rat and flounder lenses and the formation of dry and cold cataracts, 139
ONDRUSKA, O. (see HANSON, D. M.), 145
ORTWERTH, B. J. (see SRIVASTAVA, OM P.), 597

PATERSON, C. A. (see DELAMERE, N. A.), 45
PATTERSON, J. W., Volume regulation in rat lenses in media with varying concentrations of potassium and sodium, 105

Perry, M. M. (see Courtois, Y.), 661
Peterson, J. S. (see Flach, A. J.), 447
Pfeiffer, D. R. (see sen, P. C.), 209
Pollock, B. J. (see Randall, C. J.), 337
Ponticorvo, L. (see Dillon, J.), 91
Poulsom, R., Booth-Handford, R. P. and Heath, H., The effects of long-term treatment of streptozotocin-diabetic rats with an aldose reductase inhibitor, 507
Prien, S. D. (see Lombardi, J. B.), 239
Pritchard, D. J., The effects of light on transdifferentiation and survival of chicken neural retina cells, 315

Ramaekers, F. C. S. (see Ringens, P. J.), 663
Randall, C. J., Wilson, M. A., Pollock, B. J., Clayton, R. M., Ross, A. S., Bard, J. B. L. and McLachlan, I., Partial retinal dysplasia and subsequent degeneration in a mutant strain of domestic fowl (*rdd*), 337
Ratham, W. M. (see Hylkema, H. A.), 257
Regnault, F. (see Said, R.), 273
Reinach, P. S. and Kirchberger, M. A., Evidence for catecholamine-stimulated adenylate cyclase activity in frog and rabbit corneal epithelium and cyclic AMP-dependent protein kinase and its protein substrates in frog corneal epithelium, 327
Riley, M. V. (see Masters, B. R.), 1
Ringens, P. J., Mungyer, G., Jap, P., Ramaekers, F.C.S., Hoenders, H. J. and Bloemendahl, H., Reply to the letter by Y. Courtois and M. M. Perry, 663
Robins, E. (see Grierson, I.), 349
Rockey, J. H., Li, W. and Eccleston, J. F., Binding of fluorescein and carboxyfluorescein by human serum proteins: significance of kinetic and equilibrium parameters of association in ocular fluorometric studies, 455
Roizen, F. (see Flach, A. J.), 447
Rokita, J. (see Jedziniak, J.), 119
Ross, A. S. (see Randall, C. J.), 337
Ross, W. M., Creighton, M. O., Trevithick, J. R., Stewart-DeHaan, P. J. and Sanwal, M., Modelling cortical cataractogenesis: VI. Induction by glucose in vitro or in diabetic rats: prevention and reversal by glutathione, 559
Roy, D. (see Kremzner, L. T.), 649

Saffrey, M. J. (see Cole, D. F.), 191
Said, R., Bonne, C., Regnault, F. and Sincholle, D., In vitro study of γ-glutamyl transpeptidase in rat lens, 273
Sameshima, M. (see Uehara, F.), 303
Sanwal, M. (see Creighton, M. O.), 65
Sanwal, M. (see Ross, W. M.), 559
Sen, P. C. and Pfeiffer, D. R., Tissue-specific inhibition of ATPase activities in rat induced by triparanol feeding, 209
Sincholle, D. (see Said, R.), 273
Slingsby, C. and Miller, L. R., Purification and crystallization of mammalian lens γ-crystallins, 517
Spector, A. (see Dillon, J.), 91
Spector, A. (see Kremzner, L. T.), 649
Srivastava, OM P. and Ortwerth, B. J., Isolation and characterization of a 25 K serine proteinase from bovine lens cortex, 597
Stefánsson, E., Wolbarsht, M. L. and Landers, M. B., III, In vivo O_2 consumption in Rhesus monkeys in light and dark, 251
Stewart-DeHaan, P. J. (see Creighton, M. O.), 65
Stewart-DeHaan, P. J. (see Ross, W. M.), 559
Strubinger, L. M. (see Hanson, D. M.), 145

Thomson, J. A. and Augusteyn, R. C., α_m-Crystallin: the native form of the protein?, 367
Thorig, L., Van Haeringen, N. J., Timmermans, P. B. M. W. M. and Van Zwieten, P. A., Peroxidase secretion from rat lacrimal gland cells in vitro: I. Alpha-adrenergic stimulation in the absence of alpha-adrenoceptors, 475
Thorig, L., Van Haeringen, N. J., Timmermans, P. B. M. W. M. and Van Zwieten, P. A., Peroxidase secretion from rat lacrimal gland cells in vitro: II. The role of calcium in stimulus-secretion coupling, 485
Timmermans, P. B. M. W. M. (see Thorig, L.), 475, 485

Trevithick, J. R. (see Creighton, M. O.), 65
Trevithick, J. R. (see Ross, W. M.), 559

Uehara, F., Muramatsu, T., Sameshima, M., Ogata, S. and Ohba, N., Identification of peanut agglutinin receptors in the monkey retina, 303
Unger, W. G. (see Allen, J. M.), 213
Unger, W. G. (see Cole, D. F.), 191

Van Haeringen, N. J. (see Thorig, L.), 475, 485
Van Raaij, A. J. M., De Leeuw, A. L. M., Janssen, A. P. M. and Broekhuyse, R. M., Immunological relationship between the EDTA-extractable proteins from calf lens fiber membranes, 183
Van Zwieten, P. A. (see Thorig, L.), 475, 485
Vergnes, J.-P. (see Chao, C.-C. W.), 531, 533
Vigny, A. (see Nguyen-Legros, J.), 23

Wachtmeister, L., The action of peptides on the mudpuppy electroretinogram (ERG), 429
Wagner, N., Kanai, A., Harrington, J. S., Kaufman, H. E. and Nakamoto, T., Cataract formation in newborn rats from feeding a liquid protein diet during gestation, 129
Wiegand, R. D. and Anderson, R. E., Phospholipid molecular species of frog rod outer segment membranes, 159
Wiggert, B., Masterson, E. and Coulombre, A. J., Changes in retinoid binding levels during development of the chicken cornea, 499
Wilson, M. A. (see Randall, C. J.), 337
Wilson, W. S. and Barany, E., Iris delay, a neglected factor in aqueous humour dynamics. A study in the Cynomolgus monkey (*Macaca fascicularis*), 293
Wolbarsht, M. L. (see Stefánsson, E.), 251
Wollensak, J. (see Bessems, G. J. H.), 627
Wood, I. S. (see Flach, A. J.), 447

Yousufzai, S. Y. K. and Abdel-Latif, A. A., Effects of norepinephrine and other pharmacological agents on prostaglandin E_2 release by rabbit and bovine irides, 279

Zadunaisky, J. A. (see Dimattio, J.), 217, 409
Zhang, S. Q. (see Allen, J. M.), 213
Zhang, S. Q. (see Cole, D. F.), 191

SUBJECT INDEX

Actin, 393
Activation, 597
Active transport, 45
Active Cl transport, 327
Adenylate cyclase, 327
α-Adrenergic receptors, 279
β-Adrenergic system, 327
α-Adrenoceptors, 475
Aging, 627
Ageing of γ-crystallin, 517
Alanine, 77
Aldehyde dehydrogenase, 119
Aldehyde oxidase system, 119
Aldose reductase, 467
Aldose reductase inhibitor, 507
Altered permeability, 85
Amino acid, 77
Amino acid analysis, 531
Antigenicity, 183
Aqueous fluid, 649
Aqueous humor, 99, 153
Aqueous humour dynamics, 293
Aqueous turnover, 293
Arginase, 551
Arginine, 551, 597
Arterial pulsations, 421
Aspartate, 77
Association rate constants, 455
ATPase pump, 409
Autoradiography, 349
Avian iris, 583

Basal lamina, 55
β-Elimination, 533
Bicarbonate, 551
Birds, 139
Blood–aqueous barrier, 153
Blotting, 183
Bovine, 225, 551
Bovine irides, 279

Calcium, 485, 639
Calcium binding sites, 199
Calcium ion, 279
CO_2 laser, 543
Carboxylfluorescein, 455
Cat nictitating membrane, 447
Cataract, 129, 139, 145, 153, 267, 273, 439, 627, 649
Cataract type, 119
Cataractogenesis, 65, 559
Catecholamine radioenzyme assay, 447
Catecholamines, 23, 279
Cation distribution, 439
Cation imbalance, 11
Cationized ferritin, 575
Cell conversion, 315
Cellular retinoic acid-binding protein, 499
Cellular retinol-binding protein, 499
Ceramides, 91
Chick, 393
Chicken, 337
Chloride transport, 409
Cholesterol, 33
Cholesterol metabolites, 91
Choroid, 639
Chromatofocusing, 613
Cofactors for cyclo-oxygenase, 279
Co-transport, 409
Collagen, 225
Colloidal iron, 575
Column chromatography, 393
Copper, 639
Cornea, 1, 225, 327, 639
Corneal damage, 543
Cortical cataract, 65
Cross-links, 649
Crystallins, 267, 627
α-Crystallin, 367, 597
α_m-Crystallin, 367
βs-Crystallin, 517
γ-Crystallin, 517
Crystals, 517
Cultured pigment epithelium cells, 575
Cyclic AMP, 327
Cycling assay, 1
Cytochalasin B, 175

D-α-tocopherol, 65
Descemet's membrane, 225
Desmosterol, 33
Determinants, 183
Developing chicken cornea, 499
Development, 23
Diabetes, 153
Diabetic complications, 467
Diabetic rats, 559
Diabetic retinopathy, 507
Digitonide precipitable sterols, 33
Diglyceride acetates, 159
Domestic fowl, 337
Dopamine β-hydroxylase, 99
Duck, 139

EDTA-extractable proteins, 183
Electrolyte balance, 45
Electron microscopy, 55, 349, 447
Electroretinogram, 429
Endothelium, 1
Epinephrine, 327, 447
Epithelium, 1, 327
Equilibrium association constants, 455
Equilibrium dialysis, 455
Extracellular compartment, 85
Eye, 639

Fatty acids, 159
Fish, 139
Flounder, 139
Fluorescein, 455

Fluorescence, 145
Frog, 327
Frog retina, 493
Fructose, 507

Galactose cataract, 379
Gas chromatography, 77
Gas–liquid chromatography, 159
Glaucoma, 421, 447
Globular degeneration, 65
Glucose, 175
D-glucose transport, 217
L-glucose, 217
Glutamate, 77
Glutamine, 77
α-Glutamyl polyamines, 649
γ-Glutamyl transpeptidase, 273
Glutathione, 273, 559
Glyceraldehyde-3-P dehydrogenase, 119
Glycine, 77
Glycolysis, 11
O-Glycosidic linkage, 533

Hallucinogens, 493
High molecular weight proteins, 267
Histotoxic anoxia, 1
HMM S-1, 393
Human, 551
Human lenses, 199, 627
Human senile cataract, 379
Human serum proteins, 455
Hydrogen peroxide, 11, 45
6-Hydroxydopamine, 447
Hypotonicity, 85

ICI 105552, 507
Immune complexes, 257
Immunoelectrofocusing, 183
Immunoelectrophoresis, 183
Immunofluorescence, 393
Immunohistochemistry, 23
Immunological relationship, 183
In vitro cataractogenesis, 65
Infrared radiation, 543
Inhibitor, 175
Inorganic ions, 85
Inositol, 507
Insoluble proteins, 267
Insulin concentration, 153
Insulin treatment, 153
Intraocular pressure, 421
o-Iodohippurate, 293
Ionophore, 439
Ion-transport model, 409
Iris, 293, 639
Iris ciliary body, 191, 213
Iron, 639

Keratocyte damage, 543

Laser, 145
Lens, 11, 77, 175, 183, 273, 379, 385, 393, 439, 551, 597, 639, 649
Lens chloride levels, 105
Lens epithelium, 661, 663
Lens fiber swelling, 11
Lens pigmentation, 119
Lens proteins, 367
Light/dark, 251
Liquid protein, 129
Long-term streptozotocin diabetes, 55

Mammals, 139
Mass spectrometry, 77
Melanogenesis, 315
Membrane permeability, 45
Membrane proteins, 183
Mebabolism, 77
Metaplasia, 315
Methyl prednisolone sodium succinate, 65
Micro-dissection, 379
Microfilaments, 393
Molecular species, 159
Molecular weight, 367, 627
Monkeys, 293, 303
Morphometry, 55
Mouse, 257
Mucin, 533
Mudpuppy retina, 429
Mutant, 337
Myoepithelium, 583

Neural retina, 315
Neuroactive drugs, 493
Neuropeptide Y, 213
Neuropeptides, 429
Newborn rat, 129
Newt, 199
Nigericin, 439
Nitrogen, 77
Nutrition, 129

Ocular lens, 33
Ocular mucus, 531, 533
3-O-methyl-D-glucose, 217
Organic nutrients, 85
Ornithine, 551
Oscillatory potentials, 429
Oxidation, 91
Oxygen consumption, 251
Oxygen tension, 251

Peanut agglutinin receptors, 303
Peroxidase secretion, 475, 485
PGE_2 release, 279
Phosphatidylcholine, 159
Phosphatidylethanolamine, 159
Phospholipid synthesis, 33
Phospholipids, 159
Photobiology, 315
Photo-oxidation, 11
Photoreceptor membranes, 159
Photoreceptors, 199
Pigment screening, 493
Pigmentation, 315
Plasma membranes, 33
Polarography, 251
Polyamines, 649
Post-ganglionic chemical sympathectomy, 447
Post-natal development, 33

Post-translational modification, 649
Potassium distribution, 105
Pregnancy, 129
Primary culture, 349
Proline, 77
Protein kinase, 327
Protein phosphorylation, 327
Proteinase inhibitor, 597
Proteins, 649
Pupillography, 583
Purification, 467
Pyridine nucleotides, 1

Rabbit, 213
Rabbit irides, 279
Rabbit lens, 45
Radioligands, 475
Raman, 139
Rat, 23, 33, 55, 139, 209, 239, 273, 385, 551, 559
Rat exorbital lacrimal gland, 475, 485
Rat lens, 105, 467
RCS rat, 217, 575
Redox fluorometry, 1
Regeneration, 447
Retina, 23, 199, 239, 251, 303, 337, 493, 639
Retinal capillaries, 55
Retinal degeneration, 217, 315
Retinal membranes, 239
Retinal metabolism, 251
Retinal pigment epithelium, 337, 409
Retinitis pigmentosa, 217, 307, 315
Retinoic acid, 499
Retinol, 499
Retinopathy, 337
Rhesus monkey, 251
Rod outer segments, 159

S-antigen, 613
Sclera, 639
Serine, 77
Serine proteinase, 597
Size distribution, 627
Smooth muscle, 583
Sodium transport, 409
Na^+-, K^+-ATPase, 45, 209
Na^+-, K^+-pump, 105
Soluble proteins, 267
Sorbitol, 507
Sorbitol pathway, 11
Species, 639
Spectroscopy, 139
Stable isotope, 77
Sterol, 33
Stopped-flow kinetic spectroscopy, 455
Streptozotocin-diabetes, 507
Striated muscle, 583
Stromal damage, 543
Substance P, 191
Sucrose, 217
Sulfur-containing amino acids, 199
Sympathectomy, 191
Synaptic transmitters, 199
Synthesis, 385

Taurine, 239, 379, 385
Taurine binding, 239
Temperature effects, 367
Thermal effects, 543
Thin-layer chromatography, 159
Time-lapse cinephotomicrography, 349
Tissue culture, 65
Trabecular meshwork, 349
Transamination, 77
Transdifferentiation, 315
Transglutaminase, 649
Transport, 85, 175
Triparanol feeding, 209
Tritiated water, 33
Tyrosine, 531

Undernutrition, 267
Uptake, 385
Urea, 217, 551
Uveoretinitis, 613

Vitamin E, 91
Vitreous, 639
Vitreous humor, 217
Volume regulation, 105

Water-insoluble fraction, 627

Zinc, 639
ZIO, 199